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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,631	06/20/2001	John D. Olivas	NPO-20148-2-CU	9127

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EXAMINER
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DIAZ, JOSE R

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/888,631

Applicant(s)

OLIVAS, JOHN D.

Examiner

José R Díaz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 6-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Although the specification does teach that a single event pipe is used in the fabrication of MEMS device, the specification does not provide a written description of a MEMS device that includes a single event pipe.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear how the single event pipe and the MEMS device are structurally related.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 6, 7 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Joachim et al. ("A Nanoscale Single-Molecule Amplifier and Its Consequences", Proceedings of the IEEE, Vol. 86, No. 1, January 1998, pages 184-190).

Regarding claims 6, 7 and 12, Joachim et al. teaches a MEMS device comprising a piezoelectric element (PZT) connected to an end of the tunneling tip (Tip), a conductive surface or diaphragms (Surface) and a carbon-based protective padding (C<sub>60</sub>) (see Figs. 2-3) comprising a film of fullerene C<sub>60</sub> having a thickness of one molecule (see Figs. 2-3), said film (C<sub>60</sub>) located at the conducting surface (Surface) between the tunneling tip (Tip) and the conductive surface (Surface) (see Figs. 2-3). With regards to the "adapted to" limitation recited in claim 6, it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138, (CCPA 1946).

7. Claims 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by IBM Corp. ("Molecular Brush Assembly", IBM Technical Disclosure Bulletin, Vol. 37, No. 1, January 1994, pages 261-262).

Regarding claims 6 and 7, IBM Corp. teaches a MEMS device comprising a STM or FM tunneling tip (3), a conductive surface or diaphragms (2) and a carbon-based protective padding (1) (see Fig. 3) comprising a film of fullerene  $C_{60}$  having a thickness of one molecule (see page 261, last paragraph), said film (1) located at the conducting surface (2) between the tunneling tip (1) and the conductive surface (2) (see Fig. 3). With regards to the "adapted to" limitation recited in claim 6, it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138, (CCPA 1946).

Regarding claim 8, IBM Corp. teaches that the conductive surface includes gold (see page 261, first paragraph).

Furthermore, with regards to the deposition processes recited in claims 9 and 10, Applicant should note that such limitations contain method of making characteristics given no patentable weight in determining patentability of the final device structure. Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the

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patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

8. Claims 6 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Gimzewski et al. (US Pat. No. 5,897,954).

Regarding claims 6 and 7, Gimzewski et al. teaches a MEMS device comprising a STM tunneling tip (33), a conductive surface or diaphragms (30, 31) and a carbon-based protective padding (32) (see Fig. 3) comprising a film of fullerene C<sub>60</sub> having a thickness of one molecule (see col. 4, lines 39-41), said film (32) located at the conducting surface (30, 31) between the tunneling tip (33) and the conductive surface (30, 31) (see Fig. 3). With regards to the "adapted to" limitation recited in claim 6, it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joachim et al. ("A Nanoscale Single-Molecule Amplifier and Its Consequences", Proceedings of the IEEE, Vol. 86, No. 1, January 1998, pages 184-190) in view of Applicant's Specification.

Regarding claim 8, Joachim et al. teaches the use of copper as the conductive surface (see Fig. 2(a)). However, Joachim et al. is silent with respect to the use of gold. Applicant acknowledges that it is well known in the art to use gold as a conductive surface for a C<sub>60</sub> film (see page 2, lines 18-20). Joachim et al. and Applicant's admitted prior art are analogous art because they are from the same field of endeavor as applicant's invention. At the time of the invention it would have been obvious to a person of ordinary skill in the art to provide a C<sub>60</sub> film over a gold conductive surface. The motivation for doing so, as is taught by applicant, is to improve the conductivity of the device (page 2, lines 19-20: "gold's passive characteristics"). Therefore, it would have been obvious to combine Joachim et al. with Applicant's Specification to obtain the invention of claim 8.

Regarding claims 9 and 10, Joachim et al., as stated before, teaches a MEMS device with a film of fullerene C<sub>60</sub> formed between the tunneling tip and the conductive surface (see above). With regards to the deposition processes recited in claims 9 and 10, Applicant should note that such limitations contain method of making characteristics given no patentable weight in determining patentability of the final device structure. Note that a "product by process" claim is directed to the product per se, no matter how

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actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

### ***Response to Arguments***

11. Applicant's arguments, see pages 5-6 of the remarks, filed May 20, 2003, with respect to the rejection of claims 6-12 under 35 USC § 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, rejections are now made in view of Joachim et al.; IBM Corp; and Gimzewski et al. The new cited references disclose the argued tunneling tip.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gimzewski et al. (US 2002/0096633 A1) discloses a tunneling tip over one molecule formed on a conductive substrate (see Fig. 1); and Weiss et al. (US Pat. No. 5,619,035) discloses a system for analyzing surfaces (see abstract).



***Correspondence***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R Díaz whose telephone number is (703) 308-6078. The examiner can normally be reached on 9:00-5:00 Monday, Tuesday, Thursday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 746-3891 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JRD  
August 14, 2003

  
**GEORGE ECKERT**  
**PRIMARY EXAMINER**